

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 November 2004 (18.11.2004)

PCT

(10) International Publication Number
WO 2004/098522 A3

(51) International Patent Classification⁷: **A01N 45/00**,
C07C 1/00

(74) Agents: **LAURO, Peter, C.** et al.; Edwards & Angell, LLP,
P.O. Box 55874, Boston, MA 02205 (US).

(21) International Application Number:
PCT/US2004/013703

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 30 April 2004 (30.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/466,638 30 April 2003 (30.04.2003) US

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **BIOX-ELL S.P.A.** [IT/IT]; Via Olgettina, 58, I-20132 Milano (IT).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **ADORINI, Luciano** [IT/IT]; via Augusto Righi, 8, I-20133 Milano (IT). **PENNA, Giuseppe** [IT/IT]; Via Cervino, 23, I-20095 Cusano (IT). **USKOKOVIC, Milan, R.** [US/US]; 253 Highland Avenue, Upper Montclair, NJ 07043 (US). **MAEHR, Hubert** [US/US]; 30 Balsam Road, Wayne, NJ 07470 (US).

Published:

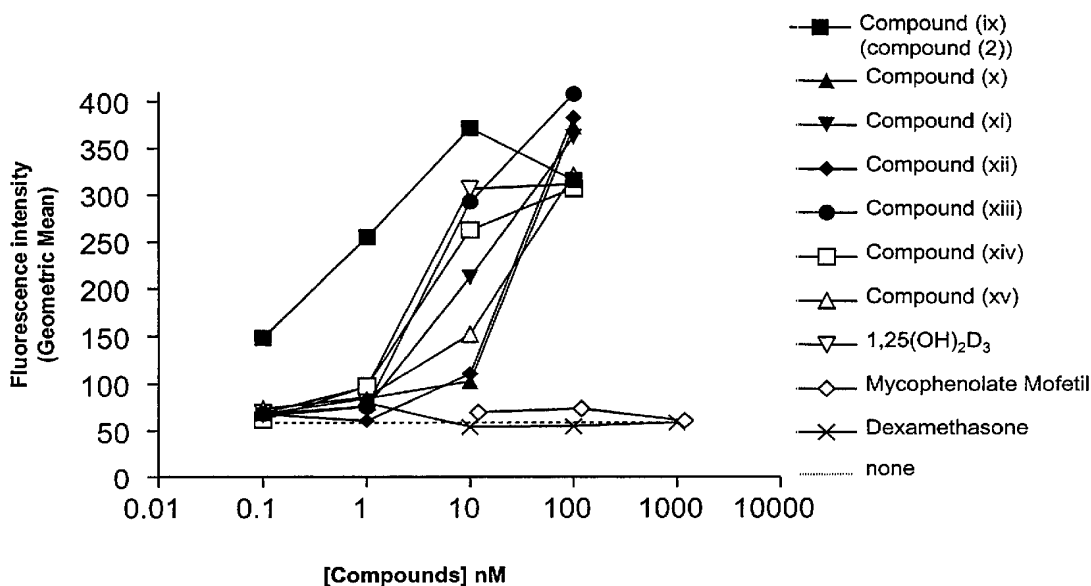
— with international search report

(88) Date of publication of the international search report:

3 February 2005

[Continued on next page]

(54) Title: GEMINI VITAMIN D₃ COMPOUNDS AND METHODS OF USE THEREOF



(57) Abstract: The invention provides Gemini vitamin D₃ compounds, methods for using the compounds to treat vitamin D₃ associated states and pharmaceutical compositions containing the compounds.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.